

1 Claims

2 What is claimed is:

3 (1) a machine for measuring angles about a plurality of axes, comprising:

4
5 one or more multi-axis tilt sensor(s)/accelerometer(s), or multiple tilt sensors
6 /accelerometers, situated about different axis; and

7
8 a computing device, for example, a microprocessor, that receives inputs from the said
9 tilt sensor(s)/accelerometer(s), translates them into expressions of angular
10 measurement and outputs the results for display, computation, or extraction;

11
12 (1A) a machine for measuring angles about a plurality of axes, comprising:

13
14 one or more multi-axis tilt sensor(s)/accelerometer(s), or multiple tilt sensors
15 /accelerometers, situated about different axis; and

16
17 a computing device, for example, a microprocessor, that receives inputs from the said
18 tilt sensor(s)/accelerometer(s), translates them into expressions of angular
19 measurement, calculates compounded angles of the various angles it measures and
20 outputs the results for display, computation, or extraction;

21
22 (2) a machine as in claims (1) or (1A) wherein a means of information extraction is
23 incorporated, in example, a communications port or infra-red transmitter/receiver.

1 (3) a machine as in claim (1) or (1A) that displays the results of the measurements
2 and/or calculations in graphic form.

3
4 (3A) a machine as in claim (3) wherein multiple displays may be exhibited
5 simultaneously.

6
7 (3B) a machine as in claim (3) wherein multiple displays may be exhibited sequentially.

8
9 (3C) a machine as in claim (3) wherein multiple displays modes are controllable, being
10 user selectable to exhibit simultaneously or sequentially.

11
12 (3D) a machine as in claim (3) wherein one or more graphic displays resemble the form
13 of a bull's-eye bubble level.

14
15 (3E) a machine as in claim (3) wherein one or more graphic displays resemble the form
16 of a curved-tube bubble level.

17
18 (3F) a machine as in claim (3) wherein the displays appear on different faces of the
19 machine's case according to the axis about which the measurements or calculations
20 producing them are made.

21
22 (3G) a machine as in claim (3) that, having calculated a compound angle, can display a
23 line representing the edge of the plane in which that angle lies.

1 (4) a machine as in claim (1) or (1A) that displays the results of the measurements
2 and/or calculations in numeric form.

3
4 (4A) a machine as in claim (4) wherein multiple displays may be exhibited
5 simultaneously.

6
7 (4B) a machine as in claim (4) wherein multiple displays may be exhibited sequentially.

8
9 (4C) a machine as in claim (4) wherein multiple displays modes are controllable, being
10 user selectable to exhibit simultaneously or sequentially.

11
12 (4F) a machine as in claim (4) wherein the displays appear on different faces of the
13 machine's case according to the axis about which the measurements or calculations
14 producing them are made.

15
16 (4G) a machine as in claim (4) that, having calculated a compound angle, can display a
17 line representing the edge of the plane in which that angle lies.

18
19 (5) a machine as in claim (1) or (1A) wherein the display format is user controllable,
20 allowing selection of either graphic or numeric format.

21
22 (5A) a machine as in claim (5) wherein multiple displays may be exhibited
23 simultaneously.

1 (5B) a machine as in claim (5) wherein multiple displays may be exhibited sequentially.

2
3 (5C) A machine as in claim (5) wherein multiple displays modes are controllable, being
4 user selectable to exhibit simultaneously or sequentially.

5
6 (5D) a machine as in claim (5) wherein one or more graphic displays resemble the form
7 of a bull's-eye bubble level.

8
9 (5E) a machine as in claim (5) wherein one or more graphic displays resemble the form
10 of a curved-tube bubble level.

11
12 (5F) a machine as in claim (5) wherein the displays appear on different faces of the
13 machine's case according to the axis about which the measurements or calculations
14 producing them are made.

15
16 (5G) a machine as in claim (5) that, having calculated a compound angle, can display a
17 line representing the edge of the plane in which that angle lies.

18
19 (8) a machine as in claims (1) or (1A) wherein angles may be measured and/or
20 calculated in multiple modes comprising various levels of precision and of speed of
21 measurement and/or calculation.

22
23 (8A) a machine as in claim (8) wherein the modes of measurement and/or calculation
24 may be selected automatically by the machine itself.

1 (8B) A machine as in claim (8) wherein the modes of measurement and/or calculation
2 may be manually selected by the user.

3
4 (9) a machine as in claims (1) or (1A) wherein one or more means of orienting the
5 device with respect to distant or remote reference points is incorporated, these means
6 being preferably by use of a laser light or other electromagnetic energy beam projected
7 from the device, but also including optical sight or reticule, audio beam, mechanical arm
8 or extension, or any other manner of remote reference.

9
10 (10) a machine as in claims (1) or (1A) wherein the measurements and results of
11 calculations may be recorded and later displayed or output for reference.

12
13 (11) a machine as in claims (1) or (1A) wherein the computing component, for example,
14 a micro-processor, can automatically select a display mode in accordance with the
15 orientation of the device as detected by the sensor module.

16
17 (12) a machine as in claim (1) or (1A) wherein the ambient temperature is measured
18 and displayed for calibration purposes.

19
20 (13) a machine as in claim (1) or (1A) wherein a discrete signal, for example, audio,
21 visual, or electrical, is emitted when the unit attains one or more pre-determined
22 angular position(s).

1 (14) a machine as in claim (1) or (1A) wherein an alarm signal is emitted that varies in
2 accordance with the machine's proximity to pre-determined angles;

3
4 (15) a machine as in claim (1) or (1A) also comprising a means of recording, or of
5 storing in a memory, a baseline or zero point for each axis from whence angles may be
6 measured;

7 (16) a machine as in claim (1) or (1A) wherein the functions of angular measurement
8 may be set to reset to zero at pre-determined or user selected angles, presenting, at
9 each applicable angle, a display such as would be exhibited by a conventional bubble
10 inclinometer in the level position.